ABSTRACT

A method of generating complementary masks for use in a multiple-exposure lithographic imaging process. The method includes the steps of: identifying a target pattern having a plurality of features comprising horizontal and vertical edges; generating a horizontal mask based on the target pattern; generating a vertical mask based on the target pattern; performing a shielding step in which at least one of the vertical edges of the plurality of features in the target pattern is replaced by a shield in the horizontal mask, and in which at least one of the horizontal edges of the plurality of features in the target pattern is replaced by a shield in the vertical mask, where the shields have a width which is greater that the width of the corresponding feature in the target pattern; performing an assist feature placement step in which sub-resolution assist features are disposed parallel to at least one of the horizontal edges of the plurality of features in the horizontal mask, and are disposed parallel to at least one of the vertical edges of the plurality of features in the vertical mask, and performing a feature biasing step in which at least one of the horizontal edges of the plurality of features in the horizontal mask are adjusted such that the resulting feature accurately reproduces the target pattern, and at least one of the vertical edges of the plurality of features in the vertical mask are adjusted such that the resulting feature accurately reproduces the target pattern.